

INTRODUCTION

Over the past decade or so, the use of bicycles as a form of transportation and a source of physical activity has increased dramatically. With obesity levels on the increase and gasoline prices steadily rising, the general population has sought out and found a viable alternative to automobile usage known as the bike. The rewards and incentives that go along with bicycle riding have inspired the Rhode Island Department of Transportation (RIDOT) to construct bicycle facilities for recreation and transportation purposes. Abandoned railroad right-of-ways and even old canals have been used in the past as the basis to construct these facilities.

The purpose of this report is to assess the area within and around a Providence & Worcester Railroad owned right-of-way in East Providence known as the East Junction line. This line is an active freight line serving both local customers and providing access to customers in Massachusetts. This right-of-way is being considered by RIDOT for the construction of an Independent Shared Use Bicycle Facility alongside the railroad tracks.



East Junction Railroad northeast of Dexter Road

This bicycle facility would be a two-way shared use path and would comply with the recommendations of the AASHTO Guide for the Development of Bicycle Facilities. The development of this facility is critical in extending the Ten Mile River Greenway to the East Bay Bike Path. If constructed, people would be able to bike all the way from Armistice Boulevard in Pawtucket to downtown Bristol with relative ease.

The section of the East Junction line that will be assessed in this report runs from the Henderson Expressway to Narragansett Park Drive in East Providence. Although this line is still active, RIDOT is proposing to acquire the right-of-way. The stretch of track is approximately 2.75 miles long and has numerous turnouts, road crossings, and bridges.

BICYCLE FACILITY GUIDELINES – AASHTO/RAILS TO TRAILS CONSERVANCY

Qualifications and specifications for the design and construction of bicycle facilities are found in the AASHTO “Guide for the Development of Bicycle Facilities”. Since this bicycle facility will be built alongside a railroad line within its right-of-way, it will be in close proximity to active trains. AASHTO guidelines state that when it is not possible to create a shoulder between a roadway and an independent shared use bicycle facility that is at least 5 feet wide, a suitable physical barrier should be used. Although rail lines are not roadways, similar if not more precautions should be taken to ensure there is no contact between bicyclists and trains. The Blackstone River Bikeway, which runs alongside a P&W railroad track as well, utilizes an 8-foot high metal gate along its side that separates the railroad tracks from the bike facility. This fence is located 18-25 feet from the center of the railroad tracks.

The recommended width of an independent shared use bicycle facility is at least 10 feet wide with 2-foot wide graded shoulders on each side. The slope of this graded shoulder should be at a maximum 1:6. If the path is adjacent to downward slopes steeper than 1:3 then a wider separation of at least 5 feet should be considered, or even a physical barrier depending on conditions around the slope. Most independent shared use bicycle facilities in Rhode Island are 12 feet wide and have 4-foot shoulders on each side. To be consistent with other shared use facilities in the state, this one should also be 12 feet wide with 4-foot shoulders where feasible. In areas where these widths are not feasible, a 10-foot wide path with 2-foot shoulders can be used.

Additional information about shared use bicycle facilities is found in the Rails to Trails Conservancy’s “Rails with Trails” report. This report gives statistics and case studies about shared use trails that are located next to active railroads. According to this report, the majority of trails (28%) located next to railroads in the United States are separated by 21-50 feet. However, 13% are separated by only 8-12 feet and another 13% are separated by only 2-7 feet. Therefore, a distance of 8-12 feet between a shared use trail and a railroad should be acceptable and safe.

Issues of safety are addressed in the “Rails with Trails” report as well. According to this report, there is much less exposure to accidents for people using a trail next to an active railroad track than people biking or walking alongside a busy road. In 1996, only one incident occurred between a trail user and a train in the United States, and it happened because the user rode around a lowered crossing gate. Compared with thousands of pedestrians and bicyclists injured while on roadways with automobiles each year, trails next to railroads have proven to be remarkably safe.

EXISTING CONDITIONS

This section presents information about existing conditions on the East Junction Railroad right-of-way and its surrounding areas in northern East Providence. For the purpose of this report, the area described as northern East Providence will be considered all limits of the city north of the 46 degree 33 minute parallel.

East Junction Railroad Line

The East Junction Railroad Line is a 6.9-mile track that runs from the East Providence Secondary track to the Shore Line track in Attleboro, MA. It was originally part of the 1831 main line of the Boston and Providence railroad. It became a branch line when Old Colony leased the Boston and Providence in 1895 and became part of the New Haven Railroad.

Service on this track is provided at least three times per week or on an as-needed basis. The Narragansett Industrial Park as well as a paper goods producer and an oil terminal are all serviced by this track. Further diversion of freight traffic to this rail line is not anticipated.

East Junction Railroad south from Ferris Avenue



Land Use

A variety of land uses border the right-of-way throughout its length. The southwestern portion of the East Junction is bordered primarily by industrial and commercial properties on both sides. The central portion is bordered primarily by high-density residential properties and some commercial/industrial property. The northern end of the right-of-way (north of Ferris Avenue) is bordered by commercial and industrial properties and forests.

Much of the abutting property to the railroad line is residential backyards, the majority of which are fenced off. Numerous dead end residential roads back up to the right-of-way, as well as three cemeteries and several large industrial buildings. A map depicting land-uses is included in Appendix A.

Trip Generators and Attractions

Numerous trip generators are located near the East Junction line. Attractions such as schools, cemeteries, golf courses/country clubs, historical buildings and shopping centers all are within walking distance of the right-of-way. All of these attractions would add to traffic along the proposed facility and therefore make it very popular.

Of these potential attractions, the two golf courses and the two shopping centers adjacent to the proposed facility would likely generate the most automobile trips. The Agawam Hunt Club course has tennis courts directly adjacent to the right-of-way, which would be very convenient for members to access via the proposed facility. Gansett Shopping Center is located close to the proposed facility as well, adjacent to the Narragansett Park Shopping Center. Linking retail centers to bike paths has proven to be successful in Barrington along the East Bay Bike Path and in Cranston along the Washington Secondary Bike Path.

Population

The East Junction railroad runs through Providence County census tracts 101.01, 101.02, and 102. The combined population of these tracts is 14,258. There are 5,933 households in the three tracts, as well as 6,191 housing units. The average age in these tracts is 40.4 years. These figures show distinctly that this area is a densely populated one with an age base that is prime for the utilization of a shared use bicycle facility. Charts showing age, households, housing units and total population can be found in Appendix B.

In the 2000 census, the city of East Providence had a population of 48,688. By 2030, the population is expected to fall to 46,599, which represents a 4.3% decrease. Although population in East Providence is expected to steadily decline over the next three decades, populations in surrounding east bay communities (Barrington, Bristol, Warren, Pawtucket), which this facility would ultimately serve, are expected to increase. Population projections for these communities are included in Appendix B.

Crossings

The East Junction railroad has six public road crossings and two water crossings. They are as follows:

- Public Road Crossings:
1. Dexter Road*
 2. King Philip Road*
 3. Roger Williams Avenue**
 4. Greenwood Avenue***
 5. Pawtucket Avenue***
 6. Ferris Avenue*



Bridge over Roger Williams Ave

Water Crossings:

1. Ten Mile River/Omega Pond**
2. Central Pond****

* *At-grade crossing*

** *Above-grade crossing with bridge utilized by the P&W railroad*

*** *Below-grade crossing utilized by the P&W railroad*

**** *This area was filled when the East Junction was constructed to allow for crossing*

PRELIMINARY ENVIRONMENTAL EVALUATION

This section discusses the potential environmental impacts that the construction and use of a 2.75-mile independent shared use bicycle facility could have on the natural and man-made environment of northern East Providence.

According to the National Environmental Protection Act (NEPA), the planning, design, and construction of bicycle and pedestrian lanes, routes, and facilities are classified as Categorical Exclusions and are exempt from the requirement for the preparation of an Environmental Impact Statement.

Agricultural Impacts

A land use map of East Providence and a RIDEM farm soil map of East Providence were obtained and studied to see if any agricultural lands existed near the right-of-way in northern East Providence. Two large areas of prime farm soil were found to be located on and around the right-of-way. One of these areas is between Roger Williams Avenue and North Broadway. This area is not considered agricultural land, however. According to the land use map, it is used as recreational and commercial/industrial land. The other area of prime farm soil is located along Central Pond in and around the right-of-way. This land is not classified as agricultural land either. Maps depicting land use and farm soil can be found in Appendix A.

Further coordination with RIDEM will be necessary to be sure that the proposed facility would not impact agricultural areas.

Relocation Impacts and Right-of-Way Acquisition

The proposed facility will follow the East Junction Railroad right-of-way in most instances. Adequate widths will be needed to allow for the facility to exist next to an active freight line. If adequate widths do not exist, acquisitions and/or easements may be needed as well as the relocation of utility poles and boxes. Electrical easements, drainage easements and sewer easements currently exist throughout the length of the East Junction right-of-way. These could be a source of conflict for the facility. Access points and parking areas may also require the use of private property and therefore more acquisitions and easements would be needed. The use of private property for this facility would be kept to a minimum however. RIDOT is currently investigating the acquisition of this line. State guide plan policy recommends that the state acquire the right-of-way.

A list of current easements on the East Junction right-of-way can be found in Appendix B.

Pedestrian and Bicycle Considerations

The proposed independent shared use bicycle facility will meet the transportation needs of pedestrians and bicyclists. It will follow AASHTO guidelines for the development of bicycle paths, and will be handicapped accessible. It will provide a safe and direct way to travel from Slater Park in Pawtucket all the way down to the Henderson Expressway in East Providence.

Air Quality Impacts

The proposed facility will have no negative effects on air quality in the area. All travel on the path will be non-motorized and therefore have no emissions. Minor positive air quality impacts will result from automobile use being diverted to bicycle use in the area. This diversion would be pronounced all along the right-of-way since it would connect two other bicycle facilities (Ten Mile River and East Bay Bike) and allow for long distance travel by bicycle.

Noise Impacts

The existence of an independent shared use bicycle facility will have no negative effects on noise levels. Bicycle and pedestrian travel create no noise that can be measured at a reasonable distance. Motor vehicles of all kinds will be prohibited from the facility as defined by Title 31 of the Rhode Island Motor Vehicle Code.

Water Quality

The proposed facility will have two water crossings. One is at the Ten Mile River/Omega Pond junction, and the other is at an artery of Central Pond. Ten Mile River and Omega Pond are both considered class B waters according to RIDEM. Central Pond north of Newman Avenue is considered class B1 water. Currently, there is a railroad bridge at the Ten Mile River/Omega Pond junction, and filling at the Central Pond artery crossing utilized by the East Junction.

Soil Hydrology

A soil hydrology map of northern East Providence was obtained and analyzed. The overall majority of soil in the right-of-way area and its surroundings is classified as very dry or dry. Very dry is considered excessively permeable and dry is considered well drained. Near the junction with the Ten Mile River/Omega Pond, soil east of the right-of-way is classified as moderately dry (water table: 1.5' – 3.5'). A soil hydrology map can be found in Appendix A.

Wetlands

A wetlands map of East Providence was obtained and studied to see potential impacts an independent shared use bicycle facility could have on them. There are two major wetlands crossings associated with the proposed facility and four potential areas of wetlands impacts within the surrounding area. The two major wetlands crossings are at the Ten Mile River/Omega Pond and a Central Pond artery near Narragansett Park Drive. The Ten Mile River crossing has an existing railroad bridge utilized by the P&W railroad. The Central Pond crossing involves an area that was filled when the P&W tracks were built. The filling dissected this artery of Central Pond into two separate pond areas. The area filled has adequate width to allow for an independent bicycle facility to utilize it alongside the railroad line. The four potential wetland impact areas are located in the following areas:

1. West of the right-of-way between Bellevue Blvd and the rail line.
2. Southeast of the right-of-way between the rail line and North Broadway.
3. Northwest of the right-of-way between Dexter Road and the rail line.
4. Adjacent to the right-of-way on its northwest side near Tallman Ave.

The immediate impacts of the proposed facility on these areas depend on which side of the rail line the path is to be constructed. However, no matter which side the path is located, coordination with RIDEM will be required. Measures will be taken to minimize impacts on wetlands in the area. A wetlands map can be found in Appendix A.

Flood Plains

FEMA Flood Insurance Rate Maps (FIRM) were obtained and analyzed to determine what flood plains the proposed independent shared use bicycle facility would cross. According to these maps, the proposed facility would cross Zone A flood plains in two places, and Zone B flood plains in three places. Zone A crossings would exist at the Ten Mile River/Omega Pond junction and possibly at the Central Pond artery crossing, depending on the exact positioning of the facility. Zone B crossings exist at these two places as well, and also potentially at a third spot where the East Junction right-of-way meets the Henderson Expressway. The rest of the right-of-way and its immediate surroundings are located in Zone C areas. Zone A plains are areas of 100-year flood. Zone B plains are areas between the limits of the 100-year flood and the 500-year flood. Zone C areas are areas of minimal flooding. East Providence FIRM maps are included in Appendix A.

Coastal Resources

The right-of-way itself does not fall under CRMC jurisdiction. It does not fall within 200 feet of any coastal feature and is not within a Special Area Management area. Therefore, the proposed facility should not fall under CRMC jurisdiction either if it is to follow along the right-of-way.

Threatened or Endangered Species/Wildlife

A Biodiversity Resources map of East Providence was obtained and studied to determine potential impacts to protected areas and critical habitats. The proposed facility would not dissect any protected areas or critical habitats. Two critical habitats for flora and fauna and one protected area do exist in northern East Providence. The critical habitats are located west of Dexter Road on the shore of the Seekonk River and east of Redland Ave on the Turner Reservoir. The protected area is located northeast of Miller Ave and east of Pleasant Street, bordering the Turner Reservoir. Coordination with RIDEM and the United States Department of Interior would be needed to make sure that no threatened or endangered species or wildlife would be affected by the proposed facility.

A list of Threatened or Endangered Species for the State of Rhode Island is included in Appendix B.

Historical and Archaeological Preservation

A National Register List of Properties for East Providence was obtained for the purpose of determining what historic properties exist near the right-of-way. A total of ten properties (one being a historic district) that are National Register listed were found to be located in northern East Providence. Of these ten, three directly abut the railroad right-of-way. They are the Springvale/Carpenter/Lakeside Cemetery, the Rumford Chemical Works and Mill Houses, and the Boston and Providence Railroad Bridge. Coordination with the Rhode Island Historical Preservation and Heritage Commission and the Narragansett Indian Tribe will be necessary to ensure that the proposed facility will not adversely affect any historic properties. Additional review through the Section 106 process will also be required should this project advance into the design phase. A complete list of National Register List of Properties for East Providence can be found in Appendix B.

Hazardous Waste Sites

A hazardous waste map of East Providence was obtained from RIDEM for the purpose of determining the locations of L-UST, CERCLA, and DSR sites in northern East Providence. According to this map, 13 L-UST sites, 6 CERCLA sites and 21 DSR sites

as well as one waste management facility are located near the right-of-way in northern East Providence. A map locating these sites as well as an explanation of L-UST, CERCLA and DSR sites can be found in Appendix A.

An ASTM Phase I Environmental Site Assessment was conducted on the East Junction by Vanasse, Hangen, Brustlin, Inc. and was finalized in October, 2003. Briefly, the findings were:

1. There are two possibilities that adjacent properties have environmentally impacted the right-of-way. These possibilities are based on their proximity of less than 165 feet to the right-of-way, their up-grade location and their lack of sampling information. The two sites are located at 210 Massasoit Avenue and 109 King Phillip Road. The Massasoit Avenue site has coal tar and petroleum impacted soils and groundwater that exceed applicable RIDEM standards. The King Phillip Road site used and delivered products including vinyl powder, resins, insecticides, colorants and industrial coatings.
2. Surficial soil investigation detected elevated concentrations of hazardous substances in excess of RIDEM's Direct Exposure Criteria. These concentrations were found after 12 soil samples each taken 5-8 feet from the rail bed were analyzed. All the substances found were ones typically detected in urban areas where railways are located.
3. Within the standard ASTM search radius around the East Junction, the following number of sites were found*:
 - 2 *CERCLIS* (Comprehensive Environmental Response Compensation and Liability Information System Sites)
 - 27 *STATE* (State sites, petroleum and hazardous materials)
 - 35 *RCRAGEN* (Resource Conservation and Recovery Act Generators)
 - 54 *UST/AST* (Underground/Above ground storage tanks)
 - 14 *LUST* (Leaking Underground Storage Tanks)
 - 16 *ERNS* (Emergency Response Notification System Sites)
 - 40 *SPILL* (State Spills List)

** Search radius around the East Junction includes areas in Pawtucket, RI, which are out of the project limits for this study. Numbers therefore include sites out of the project limits of this study.*

ACCESS AND PARKING

For the success of any independent shared use bicycle facility there must exist access and parking areas for construction vehicles and facility users. Below are desirable access points and possible parking areas.

Access:

1. The numerous dead-end roads that abut the railroad right-of-way, including Sutcliffe Circle, Linden Avenue, Woburn Road, Duncan Road, Elm Court, Mayfair Drive, and Brentwood Drive.
2. Between the right-of-way and North Broadway, for access to the Agawam Hunt Club.
3. At Narragansett Park Drive for access to Narragansett Park Shopping Center and Gansett Shopping Center.



East Junction at Narragansett Park Drive

4. At Dexter Road for access to the large industrial area there.
5. At a point connecting to the Ten Mile River Greenway on its stretch from Slater Park to Ferris Ave in East Providence.

Parking:

1. Large cleared lot abutting the right-of-way north of Ferris Avenue
2. At Francis Elementary School, a short distance from right-of-way on Bourne Ave.
3. On Narragansett Park Drive between the rail line and the street.
4. On the corner of Greenwood Avenue and Elm Avenue, northwest of East Junction (owned by Clinton Properties, Inc.).
5. Northeast of King Phillip Road on the northwest side of the East Junction (owned by Clinton Properties, Inc.).
6. At the Kimberly Ann Rock Memorial Athletic Complex on Ferris Ave (parking here exists for the Ten Mile River Greenway).

ALIGNMENT OF SHARED USE BICYCLE FACILITY

The following will discuss the alignment of the proposed shared use bicycle facility as well as its utilization of suitable physical barriers and existing bridges. A distance of 10 feet from the center of the railroad track to the shoulder edge of the facility should be maintained as a reasonable distance consistent with many other facilities in the United States that run alongside railroads. Under AASHTO guidelines, the facility must be at *least* 14 feet in total width: 10 feet of pavement and two 2-foot shoulders on each side. Therefore, a minimum of 24 feet will be needed beside the East Junction in order for the facility to exist under these guidelines.

In order for the facility to be consistent with the Blackstone River Bikeway, a minimum of 30-39 feet will be needed beside the East Junction. This bikeway uses an 18-25 foot separation with two 2-foot shoulders and a 10-12 foot wide paved path. These dimensions would be the most desirable for the proposed facility wherever possible. For the purposes of this section, however, a 24-foot minimum space from track to shoulder is used. Using this 24-foot separation would allow for the facility to exist without major relocation of utility poles.

Bridges

- *Boston & Providence Railroad bridges* (historical)-over Ten Mile River and Roger Williams Avenue. This bridge could be utilized to carry the proposed facility over these areas, although a new bridge in between the Ten Mile River and Roger Williams Avenue would be needed since the existing bridge in that area is too narrow.
- *Greenwood Avenue Bridge*- Shared use facility can utilize below-grade crossing that already exists here if potential width conflicts are resolved.
- *Pawtucket Avenue Bridge*-Shared use facility can utilize below-grade crossing that already exists here if it stays to the northwest side of the East Junction.

Physical Barriers

- An eight-foot high metal gate or similar structure should be used to separate the bicycle facility from the rail line.
- Fence posts should be used to separate the facility from adjoining properties and utility poles, with breaks in it to allow for certain access points.

Road and Rail Crossings

- At-grade road crossings will be needed at Dexter Road, King Phillip Road and Ferris Avenue. At-grade crossings at Greenwood Avenue and Pawtucket Avenue may be needed if below-grade crossings under these roads are not desired. These crossings should follow AASHTO guidelines for road crossings included in Appendix C.
- Rail crossings may be needed throughout the length of the shared use facility. If un-used rails that split off the main line in the right-of-way are removed, then the

number of these crossings will be drastically reduced. These crossings should follow AASHTO guidelines for rail crossing included in Appendix C.

Position of the Independent Bicycle Facility

- *Alignment I:*
 - The shared use facility will follow along the northwest side of the East Junction railroad from the Henderson Expressway to King Phillip Road. It will cross Dexter Road and King Phillip Road at-grade. Upon coordination with the P&W Railroad Company, un-used rail lines on the northwest side will be removed to allow for the facility to exist on this side. These lines currently exist before and after Dexter Road.
 - The facility will follow the northwest side of the East Junction from King Phillip Road to Greenwood Avenue. When the facility meets the Ten Mile River/Roger Williams Avenue area, it can be aligned two different ways:
 - The facility can utilize the Boston & Providence Railroad bridges over the Ten Mile River and Roger Williams Avenue with a new bridge in between them connecting the two bridges.
 - The facility can turn south and east before the B&P bridges (crossing the East Junction) and connect to Roger Williams Avenue for an on-road segment on Roger Williams Avenue and Magnolia Street. The facility can then return to the northwest side of the East Junction and run alongside it.
 - The facility will then follow the East Junction on its northwest side and cross Greenwood Avenue below-grade.
 - The facility will follow the northwest side of the East Junction and cross Pawtucket Avenue below-grade.
 - The facility will follow the northwest side of the East Junction and end at Ferris Avenue, where it would connect on-road to the Ten Mile River Greenway's current southern terminus. If the facility were to be extended north of Ferris Avenue, then it will have to cross the East Junction at-grade south of Ferris Avenue and then cross Ferris Avenue at-grade on the southeast side of the rail line. The facility would then have to follow the East Junction on its southeast side until it meets up with an existing section of the Ten Mile River Greenway near Narragansett Park Drive.
- *Alignment II:*
 - The facility will start at the Henderson Expressway and follow the East Junction line on its southeast side, crossing Dexter Road at-grade. The facility will then either crosses a rail that splits off of the East Junction or this rail will be removed.
 - The facility will continue on the East Junction's southeast side and cross another rail siding that splits off or this rail will be removed. It then will cross King Phillip Road at-grade and continue on the East Junction's southeast side.
 - The facility will continue on the southeast side of the East Junction and turn south and east to become on-road on Roger Williams Avenue. It will

then take a right onto Magnolia Street and reconnect to the East Junction (as described in Alignment I).

- After reconnecting from Magnolia Street, the facility will cross the East Junction and continue alongside it on its southeast side. It then will cross another rail siding that splits from the East Junction (or this rail will be removed) and continue on the southeast side of the East Junction.
- The facility will cross Greenwood Avenue at-grade on its southeast side.
- The facility will then follow the East Junction on its southeast side up to Pawtucket Avenue, which it could cross below-grade if it switched to the East Junction's northwest side, or at-grade if it diverted east a little while staying on the southeast side of the East Junction.
- From Pawtucket Avenue, the facility will follow the East Junction on its southeast side and end at Ferris Avenue, where it will connect on-road to the Ten Mile River Greenway as described in Alignment I. If it is to be extended north of Ferris Avenue, then it would cross Ferris Avenue at-grade and follow the East Junction on its southeast side to a point that will connect it to the existing Ten Mile River Greenway.

Maps showing Alignment I and Alignment II are included in Appendix A. Aerial photos depicting the proposed facility area can be found in Appendix D.

Conflicts – Alignment I

Potential conflicts exist with Alignment I of the facility as previously explained. All of these problems relate to distances between the East Junction tracks and other features in the right-of-way. They are:

- Utility poles run along the northwest side of the East Junction for its entire length from Narragansett Park to the Henderson Expressway. They are currently positioned 25-30 feet from the center of the track. This distance satisfies the minimum requirement of 24 feet, although a wider distance accomplished by moving the utilities northwest would be preferable.
- Visible drainage ditches exist approximately 20 feet from the tracks on the northwest side of the East Junction south of Greenwood Avenue. This ditch would have to be relocated.
- Track sidings that split off from the East Junction as well as manual switches may have to be removed to allow for the proposed facility to exist. These lines exist northeast of the Henderson Expressway and on the northwest side of the East Junction near Dexter Road and King Phillip Road, as mentioned above.
- A utility box exists on the northwest side of the East Junction at King Phillip Road within 15 feet of the rail line.
- The underpass at Greenwood Avenue has less than 24 feet of room between the center of the tracks and the retaining wall.

Conflicts – Alignment II

Potential conflicts exist with Alignment II of the facility as previously explained above. All of these conflicts are the result of inadequate distances between the East Junction tracks and other features in the right-of-way. They are:

- Distances between abutting properties and structures in many instances are less than the 24-foot minimum. In some areas, widths between the tracks and fenced-off yards are as little as 22 feet. Widths at existing below-grade crossings (Greenwood Avenue and Pawtucket Avenue) are also less than 24 feet. Aerial photos with approximate widths between the East Junction and abutting objects are included in Appendix D.
- The National Register Listed Springvale, Carpenter and Lakeside Cemeteries directly abut the southeast side of the East Junction right-of-way. This may become a problem if it were constructed on this side of the East Junction as described by Alignment II. The minimum distance required to build near a historic cemetery is 25 feet.
- Track sidings that split from the East Junction exist along the southeast side of the East Junction in three instances. There are two sidings between Dexter Road and King Phillip Road and one siding between Roger Williams Avenue and Greenwood Avenue. These sidings appear to be active and will have to be crossed by the facility.
- A drainage ditch runs along the southeast side of the East Junction north of Greenwood Avenue. This ditch would need to be relocated.

Both alignments have significant conflicts that will have to be addressed prior to the implementation of a shared use facility on the East Junction right-of-way. If a separating distance of 10 feet were feasible and agreeable then Alignment I with a northern terminus at Ferris Avenue would be the preferred alignment. This alignment would only involve one main rail crossing and would allow for below-grade crossings at Pawtucket Avenue and potentially Greenwood Avenue.

CONCLUSION

Based on the information gathered for this report, it can be concluded that extending the Ten Mile River Greenway down to the Henderson Expressway is possible if conflicts arising from Alignments I and II are resolved. This facility would be very important in connecting two major existing bike facilities, and therefore should be seriously considered. Although this facility would have many road and rail crossings and possibly private property acquisitions or easements, it would be well worth it to add a connection between the East Bay Bike Path and the Ten Mile River Greenway. This would make biking between Bristol and Pawtucket almost entirely off-road, adding a new transportation means not only between these two areas, but also into the city of Providence.

Additional design study effort will be required beyond the scope of this analysis to fully evaluate the feasibility and various alternatives for a bike path within this active railroad right-of-way.

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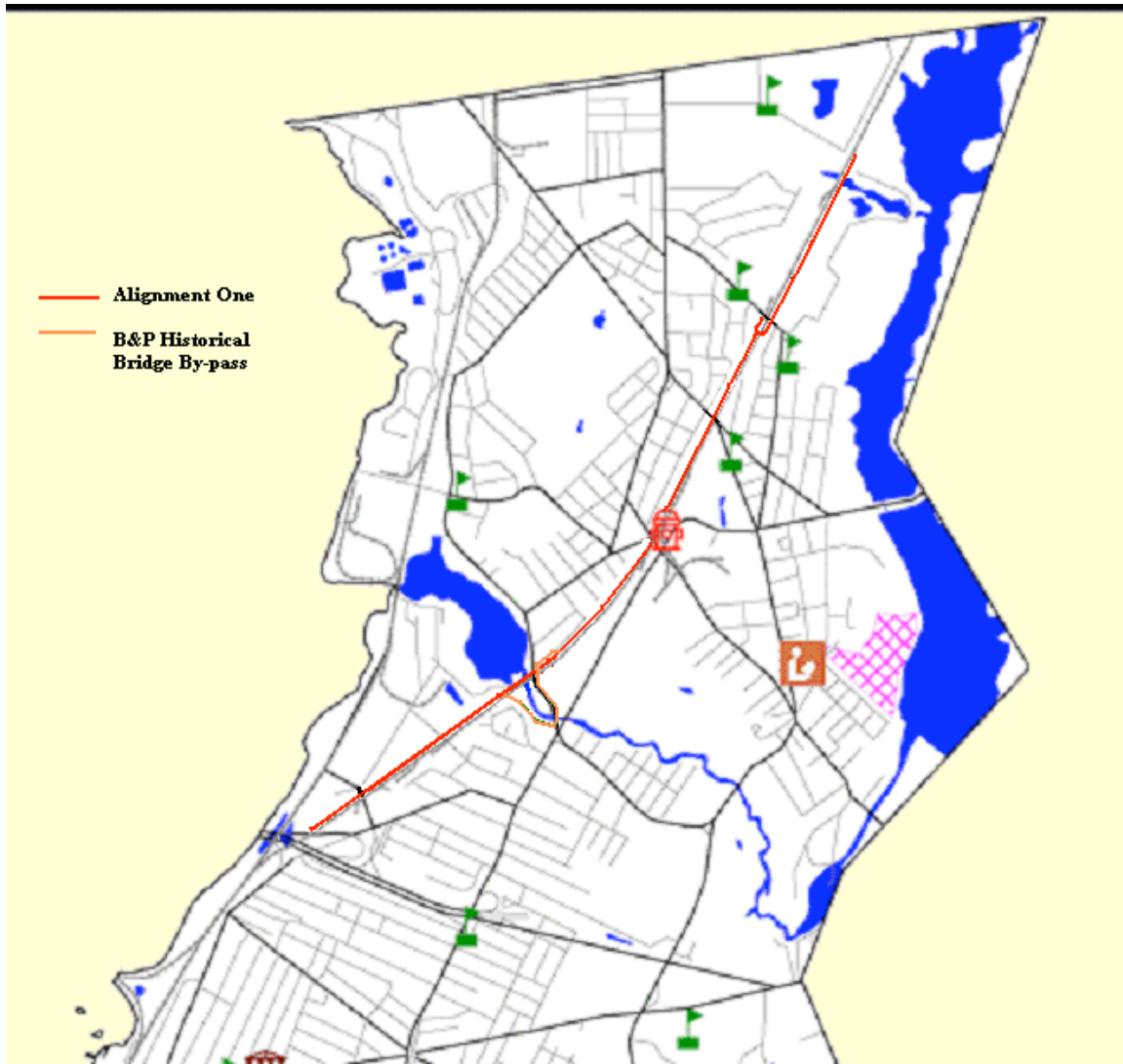
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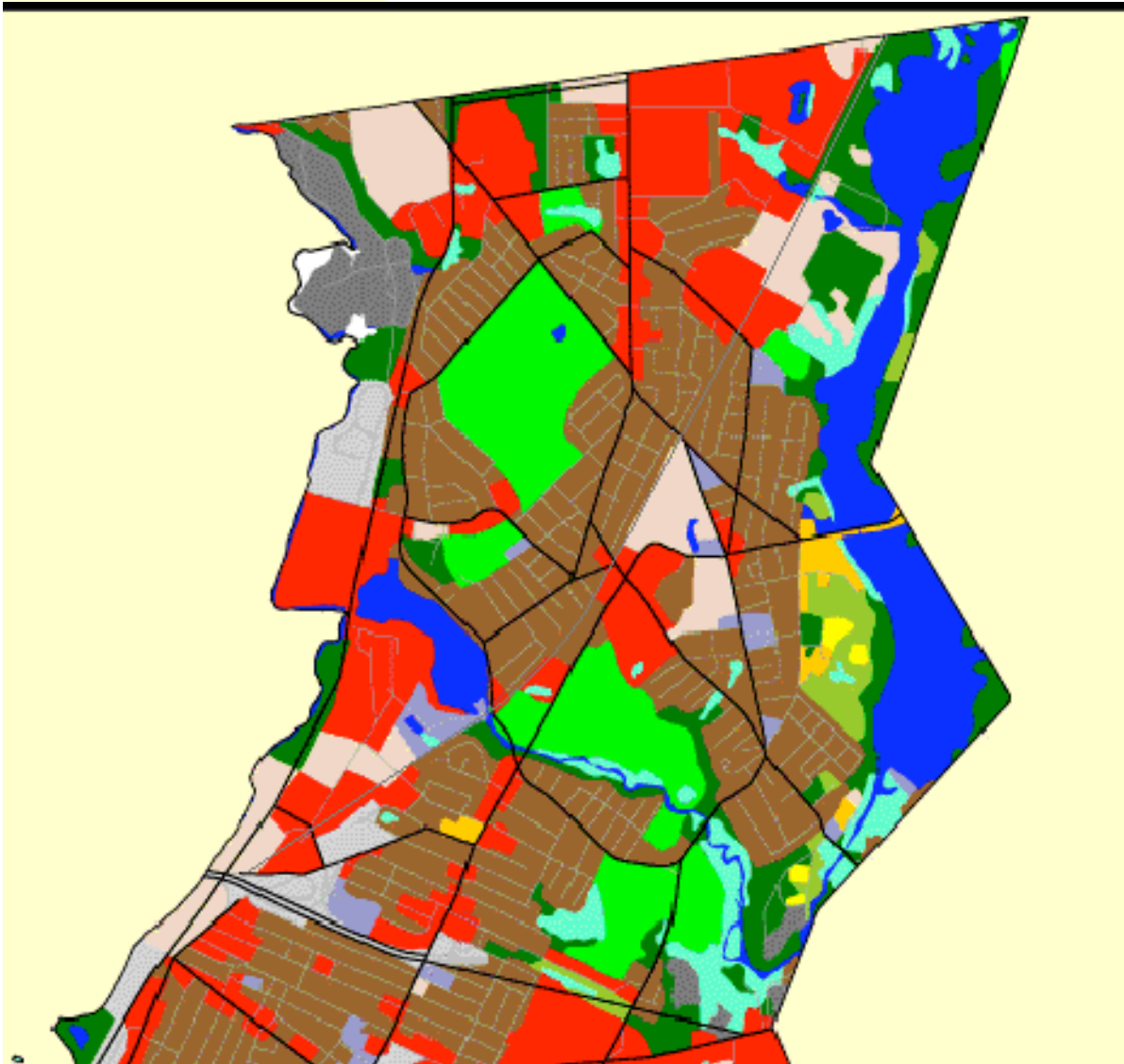
APPENDIX A: MAPS



- Alignment II
- B&P Historical Bridge By-pass

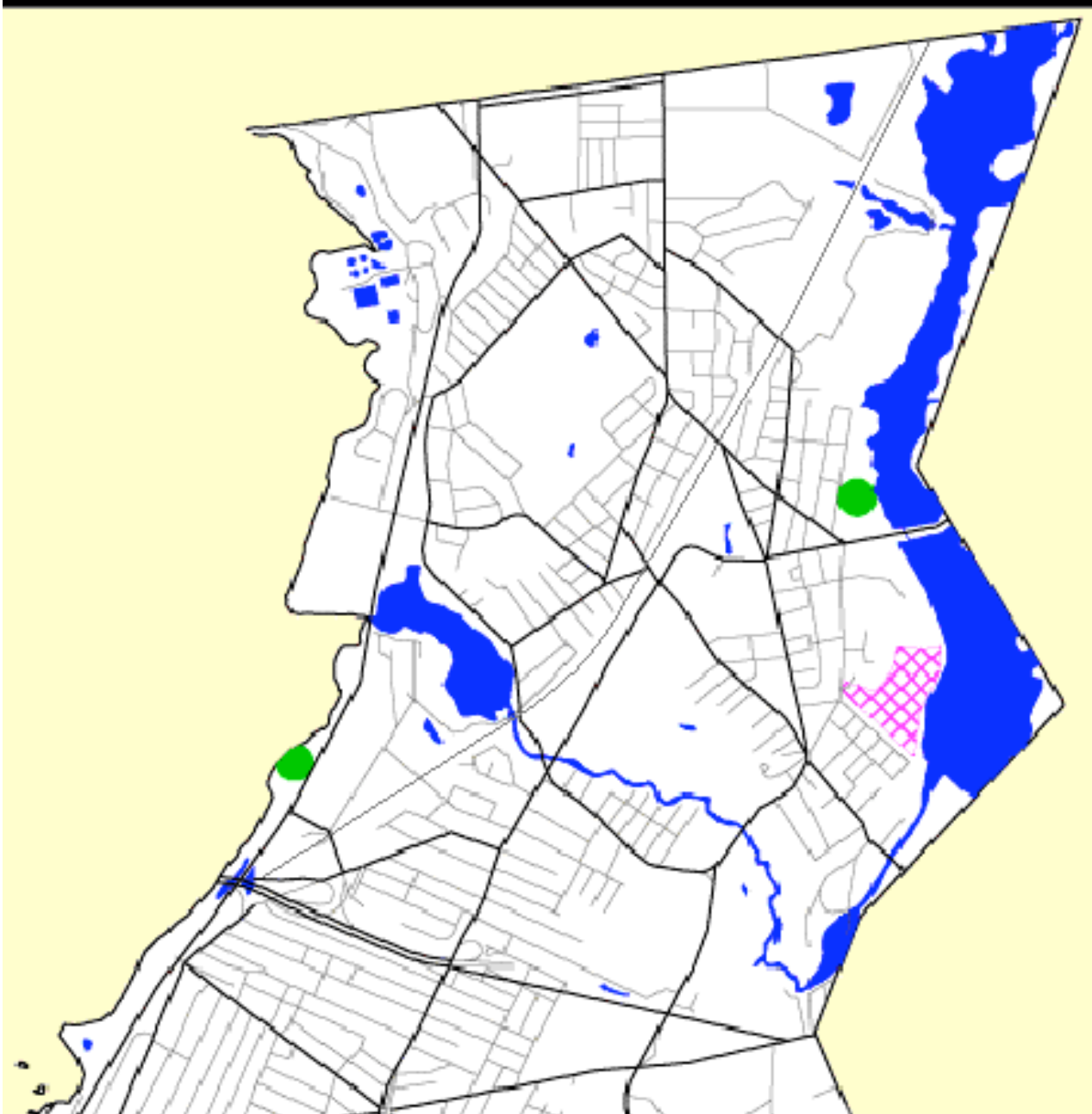


Land Use



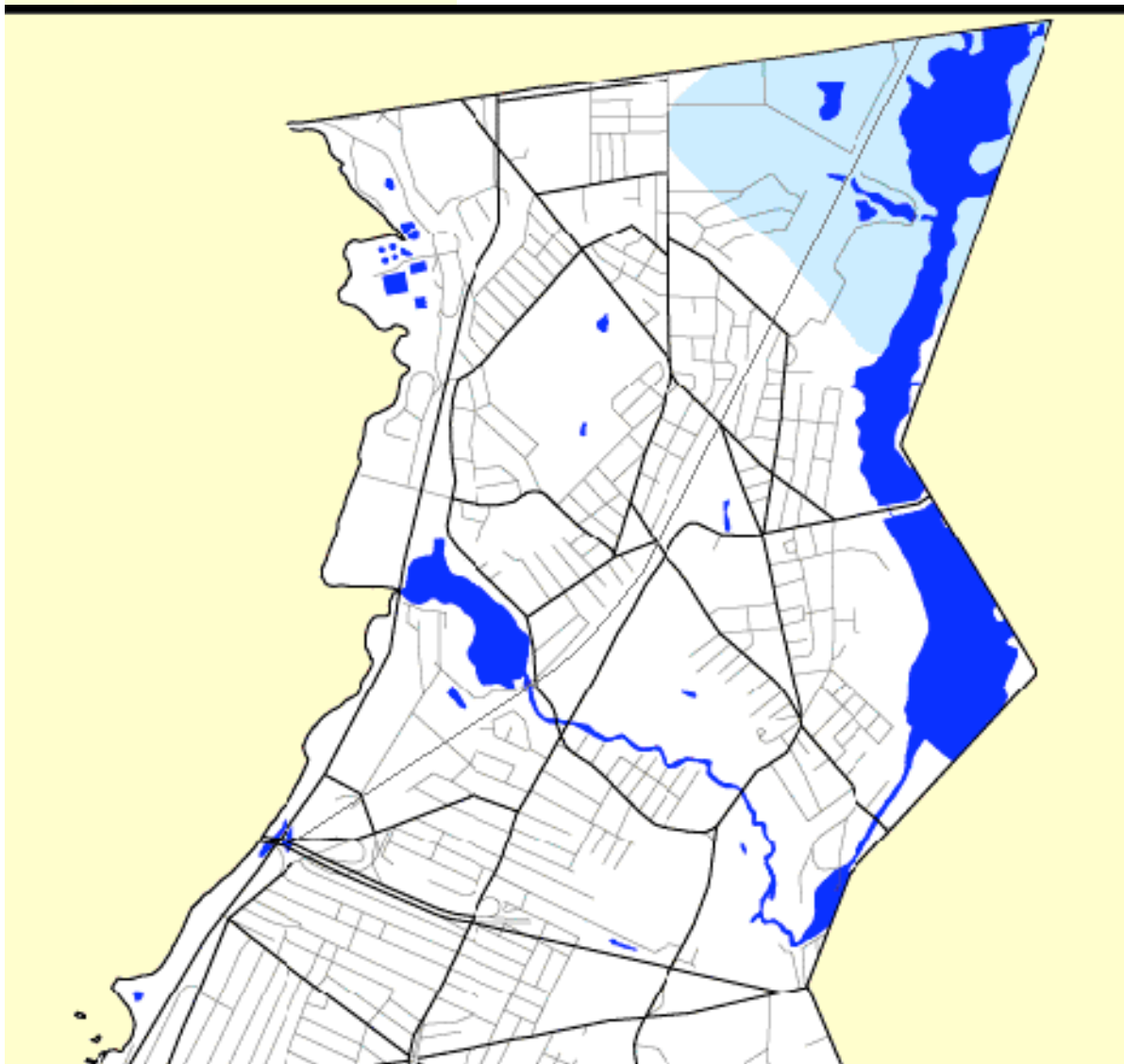
Biodiversity Resources

- Primary Roads
- Secondary Roads
- Rivers
- Ponds
- Protected Areas
- Critical Habitats



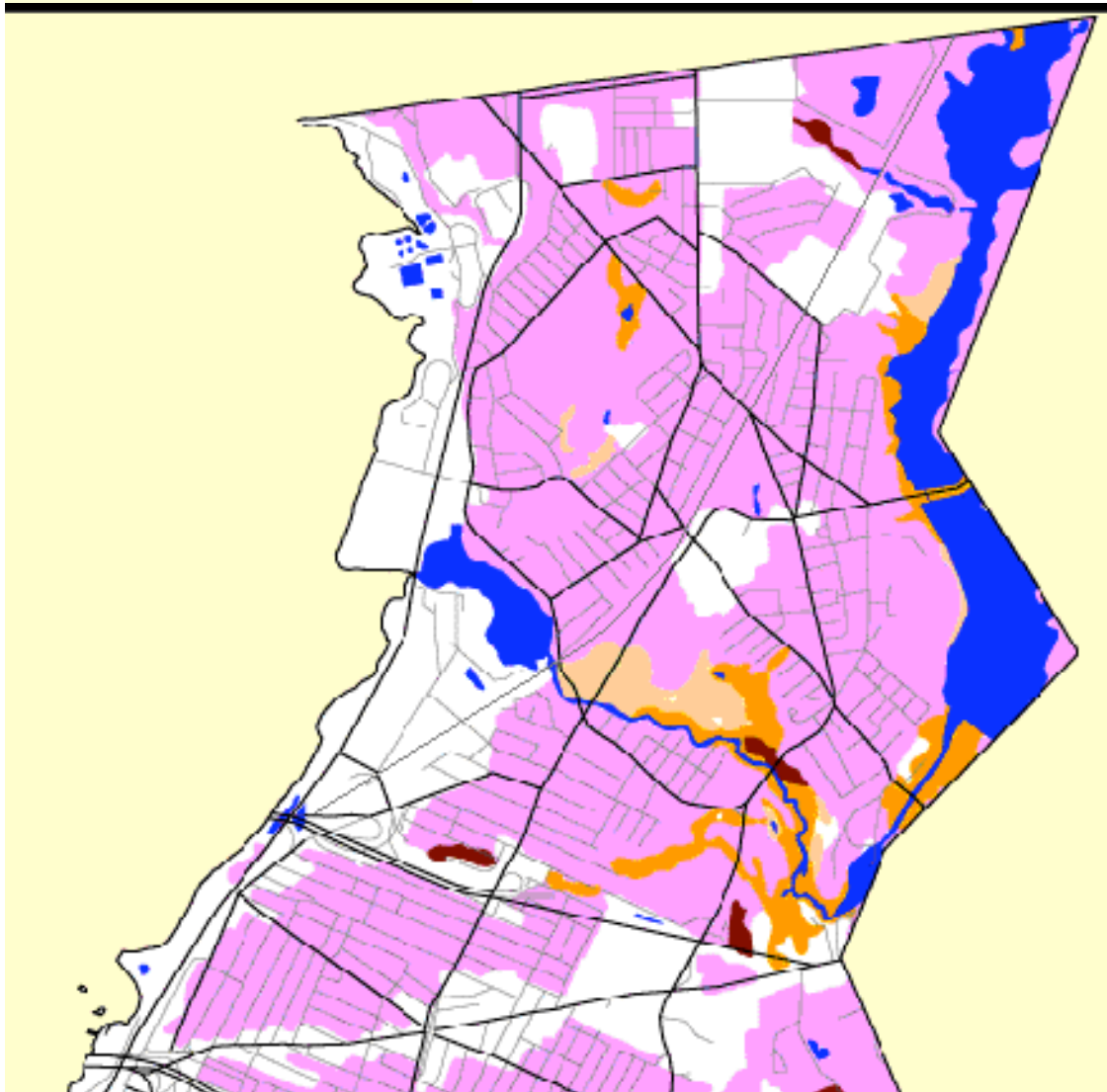
Groundwater Resources

-  Primary Roads
-  Secondary Roads
-  Wells
-  Rivers
-  Ponds
-  Groundwater Aquifers
-  Groundwater Recharge
-  Wellhead Protection Areas



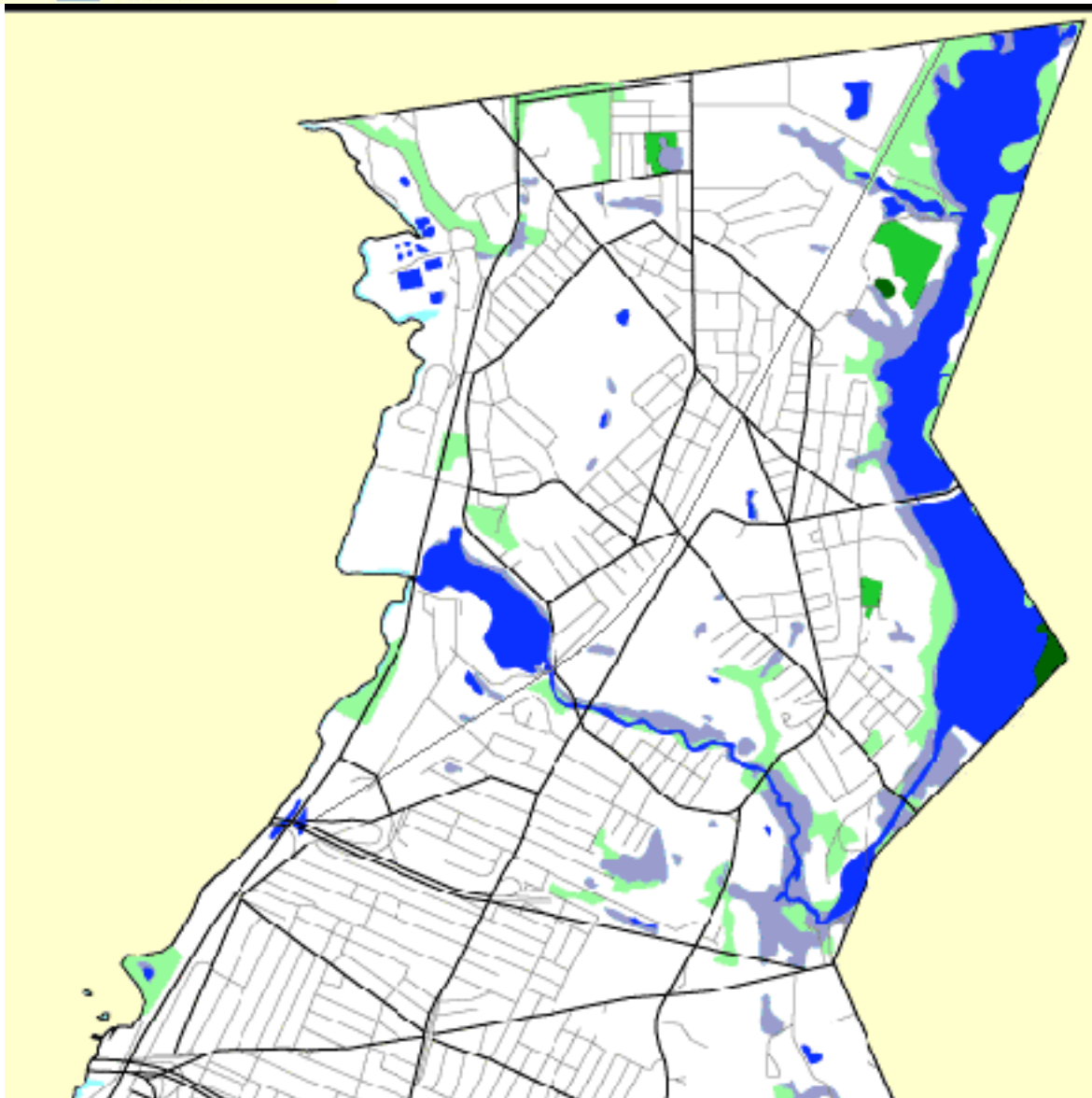
Soil Hydrology

- Primary Roads
 - Secondary Roads
 - Rivers
 - Ponds
- Soil Permeability / Depth to Water Table
- Very Dry (excessively permeable)
 - Dry (well drained)
 - Moderately Dry (water table 1.5' - 3.5')
 - Moderately Dry (water table > 6')
 - Moderately Moist (water table 1.5' - 3.5')
 - Moist (water table within 1.5')
 - Very Wet (water table within 1.5')

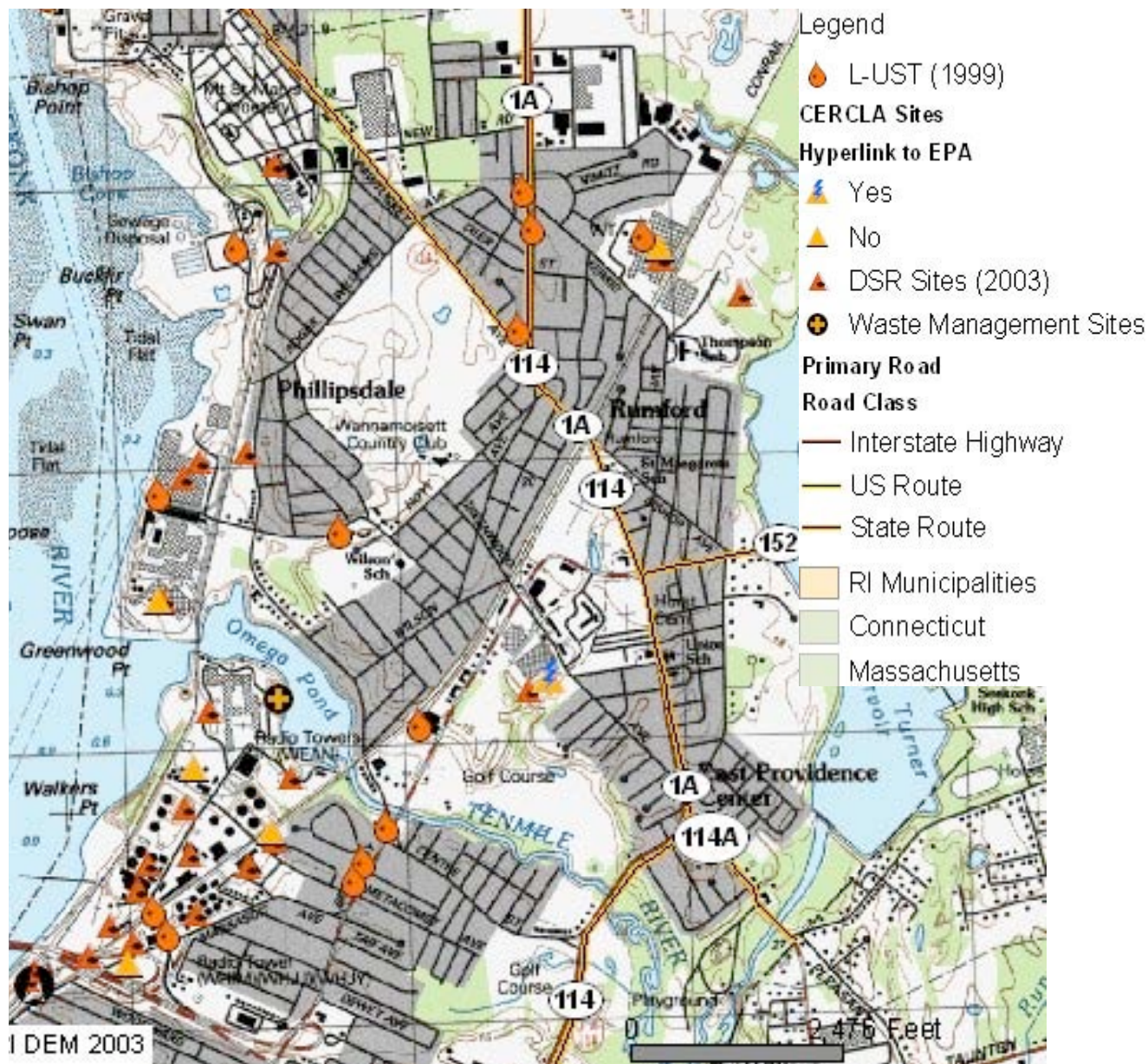


Forest and Wetland Resources

- Primary Roads
- Secondary Roads
- Rivers
- Ponds
- Forests
 - Deciduous
 - Mixed
 - Evergreen
- Wetlands
 - Coastal
 - Freshwater



DEM WASTE MANAGEMENT DATA



L-UST Sites

Inventory of sites where RIDEM has determined that an unauthorized release to the environment of hazardous materials has occurred from an underground storage tank.

CERCLA Sites

US EPA Inventory of sites where unauthorized release to the environment of hazardous materials has occurred.

DSR Sites

Inventory of sites where RIDEM has determined that an unauthorized release to the environment of hazardous materials has occurred.

RIDEM FARM SOIL

IMAGE MISSING

Legend

Primary Road

Road Class

— Interstate Highway

— US Route

— State Route

— All Roads

Farm Soil

Farm Soil

■ Important

■ Prime

■ RI Municipalities

■ Connecticut

■ Massachusetts

FLOOD INSURANCE RATE MAPS (FIRM) OF NORTHERN EAST PROVIDENCE

IMAGES MISSING

APPENDIX B: HISTORIC SITES, EASEMENTS, POPULATIONS, ENDANGERED SPECIES

**RHODE ISLAND HISTORICAL PRESERVATION AND HERITAGE COMMISSION
NATIONAL REGISTER LIST OF PROPERTIES IN EAST PROVIDENCE, RI**

Rumford Chemical Works and Mill Houses, Newman and Greenwood Avenues and North Broadway (11/28/80)

Rumford Historic District, Pawtucket Avenue and its intersection with Greenwood Avenue and Pleasant Street (1/28/80)

Crescent Park Carousel, Bullock's Point Avenue (4/21/76) NHL 1987

Philip Walker House, 432 Massasoit Avenue (7/24/72)

Newman Cemetery, intersection of Newman and Pawtucket Avenues (11/28/80)

Carpenter, Lakeside, and Springvale Cemeteries, Newman and Pawtucket Avenues (11/28/80)

Newman Congregational Church, 100 Newman Avenue (11/28/80)

James Dennis House, 3120 Pawtucket Avenue (11/28/80)

Bicknell-Armington Lightning Splitter House, 3591 Pawtucket Avenue (11/28/80)

Bridgham Farm, 120, 148, 150 and 160 Pleasant Street (11/28/80)

Pomham Rocks Light Station, end of Riverside Road (7/9//79)

Little Neck Cemetery, off Read Street (11/28/80)

Boston and Providence Railroad Bridge, across Roger Williams Avenue and Ten Mile River (11/28/80)

Nathaniel Daggett House, 74 Roger Williams Avenue (11/28/80)

World War I Memorial, 145 Taunton Avenue (10/19/01)

Squantum Association, 947 Veterans Memorial Parkway (11/28/80)

Oddfellow's Hall, 63-67 Warren Avenue (11-28-80)

Saint Mary's Episcopal Church, 83 Warren Avenue (11/28/80)

Whitcomb Farm, 36 Willett Avenue (11/28/80)

District #6 Schoolhouse/Riverside Girl Scout House, 347 Willett Avenue (11/28/80)

Current Easements

The following is a list of easements on the East Junction right-of-way from the East Providence/Pawtucket line to the Henderson Expressway. This list was obtained by analyzing the Providence & Worcester Railroad Company right-of-way and track map of the East Junction. The type of easement, the grantee of the easement, its positioning and its location in reference to station numbers marked on the track map are included.

Track Map Page #	Grantee	Type	Position	Station Number Location
4,5,6	Clinton Properties, Inc.		Entire length	
4	State of Rhode Island	Bikeway	South of Pawtucket line, southeast side of ROW	
4	Narragansett Electric Co.	Electric	Entire length of East Junction in East Providence, northwest side of ROW	96+00 – 300+90
4	City of East Providence	Water 12"	North of Ferris Ave, perp. to ROW	253+70
4	Narragansett Electric Co.	Electric	Perpendicular to ROW	248+60
4	First National Stores, Inc.	Drainage 36"	North of Ferris Ave, northwest edge of ROW, parallel	Stone box culvert: 246+97
4	City of East Providence	Sewer 16"	North of Ferris Ave, northwest side of ROW, parallel	239+94 – 249+54
4	City of East Providence	Sewer 16"	North of Ferris Ave, perpendicular to ROW	
5	Narragansett Electric co.	Electric	North of Ferris, east side, perpen.	228+54
5	Narragansett Electric co.	Electric	North of Ferris, west side, perpen.	224+20
5	Narragansett Electric co.	Electric	North of Greenwood Ave, east side, perpen.	188+60
5	Narragansett Electric co.	Electric	North of Greenwood, east side, perpen.	188+50
6	Narragansett Electric co.	Electric	North of Roger Williams Ave, perpen.	171+64
6	Narragansett Electric co.	Electric	North of Roger Williams, perpen.	171+00
6	Narragansett Electric co.	Electric	North of Roger Williams, southeast side	161+21 – 170+56

6	Narragansett Electric co.	Electric	North of Roger Williams, northwest side	164+10 – 170+70
6	Sewer Dist. Comm.	Sewer	South of Ten Mile River bridge, V-shaped	
6	R.B. Dresser	Road	At King Phillip Road	
6	R. B. Dresser	I-Beams	Southwest of King Phillip	

POPULATION STATISTICS

[P1. TOTAL POPULATION \[1\] - Universe: Total population](#)

Data Set: [Census 2000 Summary File 1 \(SF 1\) 100-Percent Data](#)

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

	Census Tract 101.01, Providence County, Rhode Island	Census Tract 101.02, Providence County, Rhode Island	Census Tract 102, Providence County, Rhode Island
Total	3,885	3,434	6,939

U.S. Census Bureau
Census 2000

[P13. MEDIAN AGE BY SEX \[3\] - Universe: Total population](#)

Data Set: [Census 2000 Summary File 1 \(SF 1\) 100-Percent Data](#)

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

	Census Tract 101.01, Providence County, Rhode Island	Census Tract 101.02, Providence County, Rhode Island	Census Tract 102, Providence County, Rhode Island
Median age--			
Both sexes	38.4	45.9	36.8
Male	37.3	44.1	34.8
Female	39.6	47.9	38.8

U.S. Census Bureau
Census 2000

[P15. HOUSEHOLDS \[1\] - Universe: Households](#)

Data Set: [Census 2000 Summary File 1 \(SF 1\) 100-Percent Data](#)

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

	Census Tract 101.01, Providence County, Rhode Island	Census Tract 101.02, Providence County, Rhode Island	Census Tract 102, Providence County, Rhode Island
Total	1,600	1,570	2,763

U.S. Census Bureau
Census 2000

[H1. HOUSING UNITS \[1\] - Universe: Housing units](#)

Data Set: [Census 2000 Summary File 1 \(SF 1\) 100-Percent Data](#)

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

	Census Tract 101.01, Providence County, Rhode Island	Census Tract 101.02, Providence County, Rhode Island	Census Tract 102, Providence County, Rhode Island
Total	1,659	1,630	2,902

U.S. Census Bureau

POPULATION PROJECTIONS CHART MISSING

THREATENED AND ENDANGERED SPECIES

• Rhode Island -- 17 listings

Animals -- 15

Status	Listing
E	Beetle, American burying (<i>Nicrophorus americanus</i>)
T	Eagle, bald (lower 48 States) (<i>Haliaeetus leucocephalus</i>)
T	Plover, piping (except Great Lakes watershed) (<i>Charadrius melodus</i>)
E	Puma (=cougar), eastern (<i>Puma (=Felis) concolor cougar</i>)
E	Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)
E	Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)
E	Sea turtle, leatherback (<i>Dermochelys coriacea</i>)
T	Sea turtle, loggerhead (<i>Caretta caretta</i>)
E	Sturgeon, shortnose (<i>Acipenser brevirostrum</i>)
E	Tern, roseate (northeast U.S. nesting pop.) (<i>Sterna dougallii dougallii</i>)
T	Tiger beetle, northeastern beach (<i>Cicindela dorsalis dorsalis</i>)
E	Whale, finback (<i>Balaenoptera physalus</i>)
E	Whale, humpback (<i>Megaptera novaeangliae</i>)
E	Whale, right (<i>Balaena glacialis (incl. australis)</i>)
T	Wolf, gray Eastern Distinct Population Segment (<i>Canis lupus</i>)

Plants -- 2

Status	Listing
E	Gerardia, sandplain (<i>Agalinis acuta</i>)
T	Pogonia, small whorled (<i>Isotria medeoloides</i>)

APPENDIX C: AASHTO DIAGRAMS

PAGES MISSING

APPENDIX D: EAST JUNCTION PHOTOS/AERIAL PHOTOS

EAST JUNCTION RAILROAD PHOTOS



Dexter Road Crossing



King Phillip Road Crossing



Northeast from King Phillip Road



Southwest from King Phillip Road



Greenwood Avenue Bridge



North from Greenwood Avenue



South from Greenwood Avenue



Pawtucket Ave Bridge



Northeast from Pawtucket Ave



Southwest from Pawtucket Ave



Ferris Ave Crossing



Southwest from Ferris Ave



Northeast from Ferris Ave



Roger Williams Ave Historic Bridge



Springvale Historic Cemetery

17 TERRASERVER IMAGES MISSING